REMARKS

Claims 1-30 are pending in the application.

Claims 1-5 and 11-13 over Mathe in view of Rabipour

In the Office Action, claims 1-5 and 11-13 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Mathe, U.S. Patent No. 6,389,069 ("Mathe") in view of Rabipour et al., U.S. Patent No. 5,577,117 ("Rabipour"). The Applicants respectfully traverse the rejection.

Claims 1-5 and 11-13 recite, *inter alia,* a first programmable filter capable of being programmed to implement <u>any of a plurality</u> of filter <u>transfer functions</u>.

Mathe appears to disclose a low power programmable digital filter adapted for use with a telecommunications transceiver (Abstract). The digital filter includes a first finite impulse response filter section for receiving an input signal and having a first transfer function (Mathe, col. 1, lines 56-60). An infinite impulse response filter section is connected to the first finite impulse response filter section and has a second transfer function (Mathe, col. 1, lines 60-63). A second finite impulse response filter section is connected to the infinite impulse response filter section and outputs a filtered output signal in response to the receipt of the input signal by the programmable digital filter (Mathe, col. 1, lines 63-66). A programmable coefficient is included in the first, second, and/or third transfer function (Mathe, col. 2, lines 3-15).

The Office Action correctly acknowledged that Mathe fails to disclose a filter selector to select any one of a plurality of transfer functions (Office Action, page 2). The Office Action relies on Rabipour to allegedly make up for the deficiencies in Mathe to arrive at the claimed invention. The Applicants respectfully disagree.

Rabipour appears to disclose a method and apparatus for estimating the frequency response of telecommunications channels (Abstract). A filter selector inserts a filter having a selected filter characteristic into a channel to <u>boost low frequency response of the voice channel</u> (Rabipour, col. 5, lines 50-

52). The filter may be selected from a bank of filters by a switching operation controlled by the filter selector (Rabipour, col. 5, lines 52-57).

The Office Action alleges that it would have been obvious to modify Mathe with Rabipour to arrive at the claimed invention. However, applying Rabipour's filter selector that inserts a filter having a selected filter characteristic to Mathe would render Mathe inoperative for the intended purpose. Mathe, as modified by Rabipour would have a programmable digital filter with a filter selector that selects between a first finite impulse response filter section, an infinite impulse response filter section, and a second finite impulse response filter section. Mathe's invention does not disclose a selector between the filter sections because <u>all three filter sections are **required** to perform the invention</u>. Modifying Mathe with a filter selector to make the invention inoperative for its intended purpose is nonsensical.

Moreover, Rabipour is relied on to disclose a filter selector to select any <u>one of a plurality of transfer functions</u> (Office Action, page 2). However, a close examination of Rabipour reveals Rabipour fails to even mention utilizing <u>transfer functions</u>, much less disclose or suggest a first programmable filter capable of being programmed to <u>implement any of a plurality of filter transfer functions</u>, as recited by claims 1-5 and 11-13.

Accordingly, for at least all the above reasons, claims 1-5 and 11-13 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

<u>Claims 6-10 over Mathe in view of Rabipour and Boyd</u>

In the Office Action, claims 6-10 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Mathe in view of Rabipour, and further in view of et al., U.S. Patent No. 6,438,162 ("Boyd"). The Applicants respectfully traverse the rejection.

Claims 6-10 are dependent on claim 1, and are allowable for at least the same reasons as claim 1.

Claims 6-10 recite, *inter alia,* a first programmable filter capable of being programmed to implement <u>any of a plurality</u> of filter <u>transfer functions</u>.

As discussed above, neither Mathe nor Rabipour, either alone or in combination, disclose, teach or suggest a first programmable filter capable of being programmed to implement any of a plurality of filter transfer functions, as recited by claims 6-9.

The Office Action relies on Boyd to allegedly make up for the deficiencies in Mathe and Rabipour to arrive at the claimed invention. The Applicants respectfully disagree.

Boyd appears to disclose an apparatus and method for restoring digital pulses within a data transmission system which have degraded due to attenuation and distortion (Abstract). The apparatus and method are suitable for high-speed applications such as T1 and E1, requiring minimal configuration by a user (Boyd, col. 36-40). Digital pulses are restored by passing a signal through an equalizer having a controllable transfer function (Boyd, Abstract).

Boyd discloses use of a **single** controllable transfer function in restoring digital pulses received over a T1 and E1 transmission medium. Boyd fails to disclose a **plurality** of transfer functions, much less a first programmable filter capable of being programmed to implement any of a plurality of filter transfer functions, as recited by claims 6-9.

Neither Mathe, Rabipour nor Boyd, either alone or in combination, disclose, teach or suggest a first programmable filter capable of being programmed to implement any of a **plurality** of filter transfer functions and a second digital filter receiving an output from a first programmable filter, as recited by claims 6-9.

Accordingly, for at least all the above reasons, claims 6-9 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 14-17, 20-25 and 27-30 over Mathe in view of Simmons

In the Office Action, claims 14-17, 20-25 and 27-30 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Mathe in view of Simmons et al., U.S. Patent No. 6,195,414 ("Simmons").

Claims 14-17, 20-25 and 27-30 recite, *inter alia,* adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal.

As discussed above, Mathe appears to disclose a low power programmable digital filter adapted for use with a telecommunications transceiver (Abstract). The digital filter includes a first finite impulse response filter section for receiving an input signal and having a first transfer function (Mathe, col. 1, lines 56-60). An infinite impulse response filter section is connected to the first finite impulse response filter section and has a second transfer function (Mathe, col. 1, lines 60-63). A second finite impulse response filter section is connected to the infinite impulse response filter section and outputs a filtered output signal in response to the receipt of the input signal by the programmable digital filter (Mathe, col. 1, lines 63-66). A programmable coefficient is included in the first, second, and/or third transfer function (Mathe, col. 2, lines 3-15).

The Office Action correctly acknowledged that Mathe fails to disclose filtering a received T1/E1 data signal (Office Action, page 5). The Office Action relies on Simmons to allegedly make up for the deficiencies in Mathe to arrive at the claimed invention. The Applicants respectfully disagree.

Simmons appears to disclose an apparatus and method for accurately simulating a digital facility including impairments in a public switched telephone network (PSTN) (Abstract). A source of the bit stream is a digital trunk, e.g., T1 or E1 lines (Simmons, col. 6, lines 43-46).

The Examiner alleges that Mathe's finite impulse response (element 20) equalization is functionally equivalent to the recited adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received data signal. However, the finite impulse response equalization performs an equalization function. Mathe fails to even mention a transmission channel having an inverse response, much less adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal, as recited by claims 14-17, 20-25 and 27-30.

Simmons discloses use of a fixed 8th order infinite impulse response filter (item 340) with a lattice structure connected to a 7th order finite impulse response filter (item 343). The second filter uses conventional (sin x)/x compensation. Simmons fails to disclose either filter that is able to adaptively adjust or matches an inverse response, much less adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal, as recited by claims 14-17, 20-25 and 27-30.

Moreover, the Examiner alleges that it would have been obvious to modify Mathe with Simmons to arrive at the claimed invention. However, Simmons invention is directed towards compensating for poor bass frequency response in **voice** channels (Mathe, Abstract). Modifying Mathe with a received T1/E1 data signal would be nonsensical since T1/E1 are data signals, **NOT** having a purpose in a system compensating for poor bass frequency response in **voice** channels.

Neither Mathe nor Simmons, either alone or in combination, disclose, teach or suggest adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal, as recited by claims 14-17, 20-25 and 27-30.

Accordingly, for at least all the above reasons, claims 14-17, 20-25 and 27-30 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 18, 19 and 26 over Mathe in view of Boyd and Rabipour

In the Office Action, claims 18, 19 and 26 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Mathe in view of Boyd, and further in view of Rabipour. The Applicants respectfully traverse the rejection.

Claims 18, 19 and 26 are dependent on claim 14, and are allowable for at least the same reasons as claim 14.

Claims 18, 19 and 26 recite, *inter alia,* adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal.

As discussed above, Mathe fails to disclose, teach or suggest a filter that is able to adaptively adjust or matches an inverse response, much less adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal, as recited by claims 18, 19 and 26.

Boyd appears to disclose an apparatus and method for restoring digital pulses within a data transmission system which have degraded due to attenuation and distortion (Abstract). The apparatus and method are suitable for high-speed applications such as T1 and E1, requiring minimal configuration by a user (Boyd, col. 36-40). Digital pulses are restored by passing a signal through an equalizer having a controllable transfer function (Boyd, Abstract).

Rabipour appears to disclose a method and apparatus for estimating the frequency response of telecommunications channels (Abstract). A filter selector inserts a filter having a selected filter characteristic into a channel to boost low frequency response of the channel (Rabipour, col. 5, lines 50-52). The filter may be selected from a bank of filters by a switching operation controlled by the filter selector (Rabipour, col. 5, lines 52-57).

Boyd fails to even mention a transmission channel having an inverse response, much less adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal, as recited by claims 18, 19 and 26.

As discussed above, Rabipour has little if any relevance to the claimed invention. Rabipour is directed toward compensating for poor bass frequency response in **voice** channels. Compensating for poor bass frequency response in **voice** channels, i.e., analog processing of communication channels is **NOT** adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received **T1/E1 data signal**, as recited by claims 18, 19 and 26.

Neither Mathe, Boyd nor Rabipour, either alone or in combination, disclose, teach or suggest adaptively adjusting an output of a first digital filter to accurately match an inverse response of a transmission channel used to transmit a received T1/E1 data signal, as recited by claims 18, 19 and 26.

Accordingly, for at least all the above reasons, claims 18, 19 and 26 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

(#46,504) for
William H. Bollman
Reg. No. 36,457

Manelli Denison & Selter PLLC
2000 M Street, NW
Suite 700
Washington, DC 20036-3307
TEL. (202) 261-1020
FAX. (202) 887-0336

WHB/df